

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

LAND RECONSTRUCTION, ABANDONED MINED LAND
(Acre)
CODE 543

DEFINITION

Restoring land and water areas that are adversely affected by past mining practices and increasing the productivity of the areas for a beneficial use.

PURPOSES

- Stabilize mined areas so that they can be used to support desirable vegetation;
- Reduce erosion and sedimentation;
- Enhance water quality or quantity;
- Maintain and improve the visual quality of the landscape; and
- Protect public health, safety, and general welfare.

CONDITIONS WHERE PRACTICE APPLIES

On abandoned mined land that degrades the quality of the environment, prevents or interferes with the beneficial use of land or water resources, or endangers the health or safety of individuals.

The standard applies to the construction, grading, and reshaping of land that has been disturbed or adversely affected by past mining of all minerals and commodities.

CRITERIA

General Criteria Applicable to All Purposes

Reconstruction plans must comply with all Federal, Tribal, State, and Local laws and regulations relating to mining and reclamation. In California, the Surface Mining and Reclamation Act of 1975 (SMARA) regulates surface mining operations, in part to assure that: 1) adverse environmental effects are prevented; 2) mined lands are reclaimed to a usable condition which is readily adaptable for alternative uses; and 3) residual hazards to the public health and safety are eliminated.

This practice is a management system that may combine practices to meet conservation goals. Land reconstruction on abandoned mined lands shall include the components necessary to reclaim and stabilize the area and prevent further degradation of air, water, soil,

and plant resources. Land reclamation and other conservation practices shall be used as appropriate, to meet the criteria for this management system. Potentially applicable NRCS Conservation Practice Standards include, but are not limited to:

- (455) Land Reclamation- Toxic Discharge Control;
- (600) Terraces;
- (410) Grade Stabilization Structures;
- (342) Critical Area Treatment.

Site preparation - Areas to be graded shall be cleared of trees, logs, brush, rubbish, and other undesirable materials that can prevent proper application of the practice. These materials shall be disposed of in a manner that precludes interference with water disposal practices, stabilization operations, or the operations associated with the planned use of the land.

Unsuitable soil material must be removed and buried so that it does not adversely affect water quality or plant growth. These materials must be disposed of in a manner that minimizes the potential for seepage, which can pollute surface and groundwater. Materials containing heavy metals must be buried to a depth below the root zone, or suitable kinds and amounts of soil amendments must be added.

Overhanging rocks and walls that are to be covered shall be sloped to ½ horizontal to one vertical slope before the soil is placed against the wall. Unless otherwise specified, fill material shall be spread in successive layers not more than two feet (0.6 meters) thick.

Removal and placement of material for final cover -

Any soil material on the site that is suitable for the intended final use shall be salvaged, stockpiled, and protected for use as final cover material.

The reconstructed soil must meet the requirements for the specified land use on at least 80 percent of the area. The rest of the area must be in such a condition that it can be stabilized.

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The salvaged material and other suitable materials must be spread over the graded areas to the depth specified in the reclamation plan. The final slope must permit application of needed conservation and management practices to keep soil losses within planned permissible levels. If settlement is likely to interfere with the planned use of the land, surface drainage, or water disposal, allowances must be made for the expected settlement during the final grading.

Temporary seeding, mulching, water disposal, and similar measures to help control erosion should be used as necessary.

Water disposal - The need for a water disposal system shall be carefully analyzed, and if needed, it shall be included in the design. The system must be intensive enough to control erosion during and after stabilization. If any practices are to be removed after vegetation is established, provisions must be made to promptly stabilize all disturbed areas. Water disposal systems suitable for intensively farmed cropland are usually required for mined land reclamation, and may be used as a guide in the absence of local experience.

Establishment - Due to the nature of mine reclamation work, it is not always possible to achieve complete stabilization with the first effort. Provisions shall be made to:

- Promptly fill and vegetate areas of excessive settlement;
- Repair and revegetate bare spots and eroded areas;
- Add soil amendments to achieve the physical or chemical soil conditions suitable for plant growth or replace with suitable soil materials;
- Add plant nutrients to achieve acceptable plant development; and
- Install additional structural measures as needed, such as terraces, lined waterways, and grade stabilization structures.

Restoration of borrow area - If cover material is taken from an area outside the reclamation site, the borrow area must be graded and reshaped to insure proper drainage, and revegetated to control erosion.

If the cover material is taken from adjacent land, the topsoil from the area must be stockpiled separately and then replaced after the land is restored for its intended purpose.

If the borrow area is prime farmland, the A and B horizons (or the B and C horizons if applicable) must be removed and stockpiled separately by horizon and then replaced on the borrow area in natural sequence. The combined thickness of the replaced horizons shall be adequate to restore the original soil productivity. Treatment of the borrow area shall meet the requirements set forth in NRCS Conservation Practice Standard 544, Land Reconstruction, Currently Mined Land.

Additional Criteria to Maintain or Improve the Visual Quality of the Landscape

The appearance of the reclaimed site must be in accordance with standards for maintaining and improving the visual quality of the landscape, and must be compatible with the adjacent landscape. Areas of high public visibility or those offering direct or indirect human benefits shall be evaluated and considered in landscape resource management planning and design. Soil piles and borrow areas should be shaped to blend with the adjacent landscape as much as possible.

Criteria to Protect Public Health, Safety, and General Welfare

Provisions must be made to reduce potential safety hazards and erosion and water pollution problems in areas that have highwalls and landslides. Treatment shall meet or exceed the requirements of NRCS Conservation Practice Standards for Land Reclamation, Landslide Treatment (453) and Highwall Treatment (456) as appropriate.

Provisions must be made to identify and reduce potential safety and contamination hazards posed by any subsurface shafts or tunnels that may be present in the area to be reclaimed. The State Conservation Engineer shall review any projects where subsurface shafts or tunnels are identified that impact or are impacted by the reconstruction project.

CONSIDERATIONS

Cultural Resources Considerations

NRCS's objective is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice will have any effect on any cultural resources.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

GM 420, Part 401, the California Environmental Handbook and the California Environmental Assessment Worksheet provide guidance on how the NRCS must account for cultural resources. The Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Some species are year-round residents in some streams, such as, freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that during critical periods, such as spawning, eggs in gravel's, and rearing of young may preclude activities in the stream that may directly affect the stream habitat during those periods. For example there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Water Quantity

1. Effects on the water budget, especially on volumes and rates of runoff, evaporation, and infiltration;
2. Potential for changes in plant growth and transpiration because of changes in the soil water.

Water Quality

1. Effects on erosion and transport of sediment and sediment-attached contaminants by surface runoff;
2. Effects on the mobilization and transport of pathogens and soluble contaminants by surface runoff, and by infiltration to the vadose zone and groundwater;
3. Effects on the chemical quality of the surface and subsurface waters draining from the reclamation site, including pH and temperature;
4. A special concern is the potential for uncovering or redistributing toxic materials from earth moving activities.

Other Considerations

A detailed soil survey should be made of the area to be reclaimed and the proposed borrow area, to identify the types and extent of soil materials.

Consider the need for access roads that would facilitate the final reclamation activities and operation and maintenance. Planning, design, and construction shall be in accordance with NRCS Conservation Practice Standard 560, Access Roads.

Reclamation has great potential for increasing or improving wildlife habitat in the reclaimed area. Avoid monocultures when developing vegetative specifications. Additional guidance regarding the revegetation of disturbed lands is available in California Division of Mines and Geology (renamed the California Geological Survey) Open-File Report 86-14 SAC.

Consider the potential for safety hazards posed by the presence of underground shafts or tunnels in the abandoned mine area targeted for reclamation.

NRCS' objective is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice will have any effect on cultural resources. Document any specific considerations for cultural resources in the design docket and the Practice Requirements Worksheet. Additional guidance is provided in GM 420, Part 401, the California Environmental Handbook, and the

California Environmental Assessment Worksheet.
Section II of the Field Office Technical Guide contains general information and references.

PLANS AND SPECIFICATIONS

Plans and specifications for reconstructing abandoned mine land shall be in keeping with this standard and shall describe the requirements for applying this practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

A plan shall be prepared that provides specific details concerning maintenance and operation of conservation practices identified in the reclamation plan. The maintenance and operation plan shall specify procedures for:

- Filling areas where settlement may adversely affect drainage and land use;
- Promptly repairing and revegetating bare spots and eroded areas;
- Adding soil amendments to soils that cannot support adequate vegetation or replacing them with suitable soil material;
- Maintaining access roads;
- Keeping drainage structures and channels clean and functional;
- Applying fertilizer and lime;
- Controlling weeds;
- Using proper grazing practices; and
- Controlling vehicular and pedestrian traffic.

REFERENCES

- California State Mining and Geology Board, Jan. 2000, California Surface Mining and Reclamation Policies and Procedures, with the Surface Mining and Reclamation Act of 1975: third revision of Special Report 51, prepared in cooperation with the Office of Mine Reclamation and the Division of Mines and Geology, 7 chapters. (the Surface Mining and Reclamation Act of 1975 is available online at <http://www.consrv.ca.gov/OMR/>).
- USDA, NRCS, 1999, Mining Specifications for Prime Farmland: Federal Register/Volume 64, No. 124, Tuesday, June 29, 1999/Notices, pages 34770-34778. Online access via http://www.access.gpo.gov/su_docs/aces/aces140.html
- Van Kekerix, L., and Kay, B.L., 1986, Revegetation of Disturbed Land in California: An Element of Mined-Land Reclamation: California Division of Mines and Geology Open-File Report 86-14 SAC, 105 p.